

Seeking Common Ground In Ethical Debates about Technosciences Like SynBio

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<http://syntheticbiology.org/>

Synthetic Biology is

- A) the design and construction of new biological parts, devices, and systems, and**
- B) the re-design of existing, natural biological systems for useful purposes.**



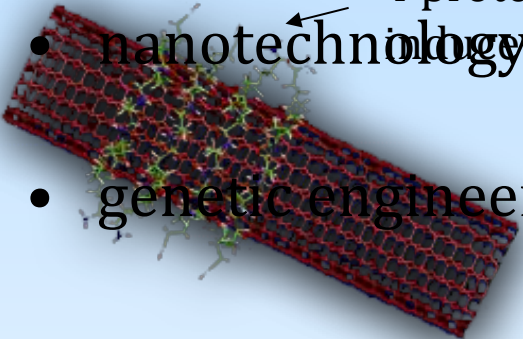
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Synthetic Biology Is

- “extension” of genetic engineering
 - e.g., splice synthetic elements into naturally occurring genomes
- “improvement” upon genetic engineering
 - way to avoid complexity associated with naturally occurring organisms
 - hard to neatly distinguish among emerging TSs:

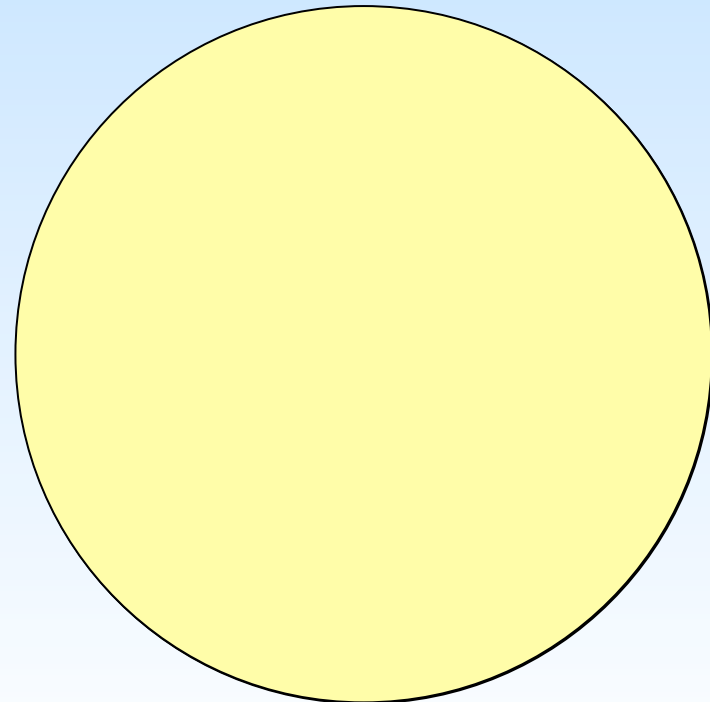


What Does This Count As?

- nanotechnology? 
- genetic engineering?
- stem cell research?
- synthetic biology?

4 protein cocktail to pluripotency

de-differentiated cell



- Given **convergence** of technosciences (TS), in principle it doesn't make sense to address ethical concerns **in parallel**
- Even when TS streams are distinct, ethical questions are largely the same
 - ethics of **emerging TSs** could increase “ethical efficiency”
- Today—in context of SB—will consider recurring ethical concerns about all emerging TSs
 - doing so gives chance to articulate some basic tenets of an ethics of emerging TSs



Next 3 Steps

1. Consider concerns re: **physical** and **non-physical** harms
3. Describe **pro-actionary** & **pre-cautionary** frameworks
5. Consider debate re: old-fashioned genetic engineering
 - to suggest why, in the SB debate in particular and the TS debates more generally, we should be attuned to insights re: **both** sorts of concerns & from **both** frameworks



1. Concerns about Physical & Non-Physical Harms



- Concerns re: **physical** harms (PHs)
 - “bodily harms”
 - shared by enthusiasts & critics

- Concerns re: **non-physical** harms (N-PHs)
 - harms to “well-being”
 - emphasized by critics



Concerns re: Non-Physical Harms

- sometimes conveyed with phrase “playing God”
 - little traction in the policy world
- but **can** express an important idea re: our proper **attitude** or **stance**
 - toward ourselves, children, rest of the natural world
 - a concern about failing to play our “proper role”
- **not** exclusively a “religious” concern
 - e.g., ETC Group & CGS
 - example where almost all “get” a N-PH concern:



A non-SynBio Example: \$50K Eggs

- Some concerns **are** about PH (safety)
 - & some concerns about coercion
- But a fundamental N-PH concern is about **adopting the wrong attitude** toward children, ourselves, and the world
 - shouldn't act towards children as if they were “commodities”



Our Report Urges Respect for Concerns re: Non-Physical Harms

- Showing respect is **intrinsically** good
 - what persons as persons deserve
- Showing respect can be **instrumentally** good:
 - in case of synbio, critics' concern about **N-PHs** can deepen conversation about **PHs**
 - to see how, consider two “frameworks”



2. “Pro-Actionary” & “Pre-Cautionary” Ethical Frameworks



“Frameworks”

- Pro-Actionary / Pre-Cautinary is a heuristic
 - **not** same as political liberal / political conservative
 - **not** same as secular / religious
- Few “inhabit” only one framework
 - with good reason, most oscillate
 - frameworks emphasize complementary insights
- Way to remember no one begins from reason alone:
 - assumptions grow out of embodied & social experiences
 - failing to remember “particularity” is **unreasonable**



Pro-Actionary Framework

- **Enthusiasts** emphasize particular view about **nature of nature**
 - it is an elaborate machine
 - which readily can be engineered to meet our needs
- emphasize a particular view about the **nature of persons**
 - we are *by nature* **creators**
- from which flows understanding of **ethical** obligations:
 - our job as persons is to engineer ourselves & the world
 - this framework is so powerful it sometimes seem like no framework at all



Pre-Cautious Framework

- **Critics** emphasize particular view about **nature of nature**
 - it is an elaborate web, including organisms w/ emergent properties
- emphasize particular view about **nature of persons**
 - we are by nature (fallible) **creatures**
- from which flows understanding of ethical obligations:
 - our job is to **recognize the limits of our understanding**
 - short-term gains don't always = long-term flourishing
 - insights from the P-C framework can be hard to sell



3. Attuning to Both Frameworks & Both Sorts of Concerns



A Connection between PH & N-PH Concerns in the GE Debate

- Some formulations from **pre-cautionary** framework were overblown
 - didn't go to hell in a hand basket
 - **pro-actionary** view had important things to say
 - e.g., it's our job to create genetic tools to treat diseases
- Some claims from the **pre-cautionary** framework were on target
 - exhortation against “bean-bag genetics”
 - today “a revolution” in understanding what genes are & how they work
 - “the central dogma” is undergoing radical reformulation
 - chances for creating PHs with GE may be greater than imagined



A Connection between PH & N-PH Concerns in the SynBio Debate

- As “improved GE,” a way around complexity,
 - SB might seem in principle less risky than GE
 - but SB creations may interact in unpredictable ways with naturally occurring organisms to create PHs
- As “extension of GE,” SB seeks to re-engineer nat systems
 - but “the more we know about those systems, the less we know”
- Even if critics’ formulations re: N-PHs can seem naïve & be overblown, their framework can contain insight
 - pre-cautionary **attitude** toward nature may help prevent PHs



In Debates re: TSs, Remember:

1. Both sides begin from a particular framework
 - which emphasizes different aspects of (i) how nature is; (ii) how we are; and (iii) what our ethical obligations are
 - P-A frame is so strong, it can seem like no frame at all
 - remembering “particularity” can deepen understanding
2. Intrinsically, it is good to show respect to persons who proceed from “the other” framework
3. Given potential negative consequences of acting too quickly —**or** of not acting at all—bear in mind insights (i) from both frameworks and (ii) re: both sorts of harms





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